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CLIPPEDIMAGE= JP402083987A
PAT-NO: JP402083987A
DOCUMENT-IDENTIFIER: JP 02083987 A
TITLE: PIEZOELECTRIC ACTUATOR

PUBN-DATE: March 26, 1990

INVENTOR-INFORMATION:

NAME

TAKAHASHI, TAKASHI
YAMAMOTO, TAKASHI

ASSIGNEE-INFORMATION:

NAME

TOYOTA MOTOR CORP

COUNTRY

N/A

APPL-NO: JP63234820

APPL-DATE: September 21, 1988

INT-CL (IPC): H01L041/09; F02M051/00 ; F02M057/02
US-CL-CURRENT: 310/311

ABSTRACT:

PURPOSE: To avoid the partial wear of a piston and avoid the breakage of a piezoelectric device by a method wherein a hollow cylinder which is given a spring function by forming slits on its outer circumference is fitted onto the outer circumference of the piston.

CONSTITUTION: An elastic hollow cylinder 81 is composed of a uniformly thin hollow cylinder. Pairs of slits 100 and 101 which are provided symmetrically against the axial line K-K of the cross section of the cylinder 81 with position difference of 90° between each other and form bridging parts 102 and 103 are formed on the outer circumference of the cylinder 81. The cylinder 81 is fitted onto the cylindrical outer circumference of a piston 73 in a compressed state and a compression force is applied to a piezoelectric device 77 through the piston 73 by the spring force of the cylinder 81. As the fitted cylinder 81 is supported by the cylindrical outer circumference of the piston

73, its axial line is not warped and maintained straight. As a result, a uniformly distributed load is applied to the piston 73 by the cylinder 81, so that the partial wear of the piston can be avoided and hence, the partial load is not applied to the device 77 and the breakage of the device 77 can be avoided.

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DERWENT-ACC-NO: 1999-328142
DERWENT-WEEK: 200013
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TITLE: Cylindrical spring especially as bias or reaction spring
for
piezoelectric multilayer actuator in diesel common rail injector
- has
one-piece hollow cylindrical base body, spring arms formed in
cylinder walls,
and divided with at least dual rotation symmetry with respect to
cylinder axis,
and terminating rings joining spring arm ends

INVENTOR: GOTTLIEB, B; KAPPEL, A ; MEIXNER, H ; MOCK, R ; UNGER,
M

PATENT-ASSIGNEE: SIEMENS AG[SIEI]

PRIORITY-DATA: 1997DE-1050149 (November 12, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	
PAGES	MAIN-IPC		
DE 19750149 C2	February 17, 2000	N/A	000
	F16F 001/06		
DE 19750149 A1	June 2, 1999	N/A	005
	F16F 001/06		

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		
DE 19750149C2	N/A	1997DE-1050149
November 12, 1997		
DE 19750149A1	N/A	1997DE-1050149
November 12, 1997		

INT-CL_(IPC): F16F001/06

ABSTRACTED-PUB-NO: DE 19750149A

BASIC-ABSTRACT: The cylindrical spring has a one-piece hollow
cylindrical base
body, spring arms (1,2) formed in the walls of the cylinder and
divided with at
least dual rotation symmetry with respect to the cylinder axis
and terminating
rings (3,5,31,51) joining the spring arm ends.

The spring arms are mirrored at a mirror plane located at the

centre of the
axial longitudinal extent of the spring body and perpendicular to
the cylinder
axis, are joined via a centre ring (4,41) in the mirror plane and
are joined
approximately perpendicularly to the terminating rings and the
centre ring.

USE - For control of fuel (diesel) injection valves.

ADVANTAGE - Small vol. spring has hysteresis-free spring
characteristic.

CHOSEN-DRAWING: Dwg.1,2/2

TITLE-TERMS:

CYLINDER SPRING BIAS REACT SPRING PIEZOELECTRIC MULTILAYER
ACTUATE DIESEL
COMMON RAIL INJECTOR ONE PIECE HOLLOW CYLINDER BASE BODY SPRING
ARM FORMING
CYLINDER WALL DIVIDE DUAL ROTATING SYMMETRICAL RESPECT CYLINDER
AXIS TERMINATE
RING JOIN SPRING ARM END

DERWENT-CLASS: Q63 V06 X22

EPI-CODES: V06-M06D; V06-U03; X22-A02A;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1999-246087

CLIPPEDIMAGE= JP355134990A
 PAT-NO: JP355134990A
 DOCUMENT-IDENTIFIER: JP 55134990 A
 TITLE: PIEZOELECTRIC ELEMENT UNIT

PUBN-DATE: October 21, 1980

INVENTOR-INFORMATION:

NAME
 ONISHI, MASAO

ASSIGNEE-INFORMATION:

NAME
 MATSUSHITA ELECTRIC IND CO LTD

COUNTRY
 N/A

APPL-NO: JP54092073
 APPL-DATE: July 19, 1979

INT-CL (IPC): H01L041/00; F23Q003/00
 US-CL-CURRENT: 310/311

ABSTRACT:

PURPOSE: To facilitate fabrication of a pezolectric element unit, by providing inside surface of an insulating semi-cylindrical body with protrudent coils to contain pressure-attached element and impact-receiving metal, etc., and then, *Pressure attached* by joining it with the other semi-cylindrical body in butt-on manner.

CONSTITUTION: An insulating case 6 is formed in such a manner that it is joined at its circumferential end section and that two semi-cylindrical bodies which are free-to-turn centering on the joined section are butt-on welded to each other. Inside surfaces of the semi-cylindrical bodies 6a and 6b are provided with protrudent coils 6c to be pressure-attached onto outside surface of piezoelectric elements 1 and 1', center section of the semi-cylindrical body 6b is provided with an intermediate terminal 2 take-out cylinder 6d, and its axial end section is provided with a step section 6e for engagement between an impact-receiving metallic object 4 and a receiving body 5, and then, force to

flange 6e prestresses!

press the piezoelectric elements 1 and 1' is applied to the metallic object 4 and the receiving body 5 by the step section 6e. As it is possible, in this mechanism, to divide outside surface of the piezoelectric elements into many steps by the protrudent coils 6e and to prevent thereby internal discharge, necessity of impregnation of insulating resin becomes eliminated and therefore fabrication becomes easier.

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	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	1	5239223.pn. and (compress\$ or press\$ or bias\$ or prestress\$)	USPA T	2001/12/2 7 10:19
2	BRS	L2	1	4953004.pn. and (compress\$ or press\$ or bias\$ or prestress\$ or preload\$)	USPA T	2001/12/2 7 10:21
3	BRS	L3	1	4943004.pn. and (compress\$ or press\$ or bias\$ or prestress\$ or preload\$)	USPA T	2001/12/2 7 10:47
4	BRS	L4	1	5113108.pn. and (compress\$ or press\$ or bias\$ or prestress\$ or preload\$)	USPA T	2001/12/2 7 11:00
5	BRS	L5	3551	(hous\$ or cas\$ or body) same hollow same (seam\$ or butt\$)	USPA T	2001/12/2 7 11:15
6	BRS	L6	83	15 and (piezo\$ or magnetostrictive or electrostrictive)	USPA T	2001/12/2 7 11:20
7	BRS	L7	13	16 not button	USPA T	2001/12/2 7 11:07
8	BRS	L8	1472	(hous\$ or cas\$ or body) same hollow same (seam\$ or butt\$)	EPO; JPO; DERW ENT; IBM TDB	2001/12/2 7 11:22
9	BRS	L9	2	18 and (piezo\$ or magnetostrictive or electrostrictive) not button\$	EPO; JPO; DERW ENT; IBM TDB	2001/12/2 7 11:20

09/639962

	Type	L #	Hits	Search Text	DBs	Time Stamp
10	BRS	L10	30	(hous\$ or cas\$ or body) same hollow and (edge\$) and piezo\$	EPO; JPO; DERW ENT; IBM TDB	2001/12/27 11:26
11	BRS	L11	3127	(hous\$ or cas\$ or body or cylind\$) same (seam\$ or butt\$ or edg\$) adj2 (weld\$ or braz\$)	EPO; JPO; DERW ENT; IBM TDB	2001/12/27 11:34
12	BRS	L12	12	111 and (piezo\$ or magnetostrictive or electrostrictive)	EPO; JPO; DERW ENT; IBM TDB	2001/12/27 11:34

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	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	562	piezo\$ and hollow adj1 (cylinder or container)	USPA T	2001/12/2 7 08:45
2	BRS	L2	189	piezo\$ and hollow adj1 (cylinder or container)	EPO; JPO; DERW ENT; IBM TDB	2001/12/2 7 08:46
3	BRS	L3	0	6274967.uref.	USPA T; EPO; JPO; DERW ENT; IBM TDB	2001/12/2 7 09:16
4	IS&R	L4	0	("6274967.uref.").PN.	USPA T	2001/12/2 7 09:16
5	BRS	L5	0	6274967.uref.	USPA T	2001/12/2 7 09:17
6	BRS	L6	0	6274967.fref.	EPO; JPO; DERW ENT; IBM TDB	2001/12/2 7 09:18
7	IS&R	L7	9	((("4958101") or ("5004945") or ("5113108") or ("5148077") or ("5208506") or ("5239223") or ("5250868") or ("5271133") or ("5295288"))).PN.	USPA T	2001/12/2 7 09:26
8	IS&R	L8	7	((("5166908") or ("6265810") or ("5557974") or ("5675886") or ("6135234") or ("4174799") or ("6274967"))).PN.	USPA T	2001/12/2 7 09:27

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